

REMARKS

In view of the foregoing amendment and the following response, Applicants respectfully request reconsideration of the claims pending in this application. Claims 1-14 are pending. Claims 1, 2, 5 (as to SEQ ID NOS: 1 and 2), 6, 7, 9, 10 and 11 are the subject of this examination. Claims 2, 5, and 9 are amended. Claim 2 for punctuation correction, claim 9 for dependency correction and claim 5 to more specifically recite an activity. In the discussion that follows Applicants address each of the rejections and objections in the order that they appear in the Office Action mailed May 29, 2003.

The Examiner rejects claim 9 under 35 U.S.C. 101 because the Examiner believes the claimed host cell may be construed as reading on a transgenic human. Applicants respectfully disagree with the Examiner and submit that claim 9 must be read in view of the specification. There is nothing in the specification that lends a fair interpretation of claim 9 to extend to a transgenic human. All references to a host cell in the specification refer to a cell in the context of recombinant expression of the disclosed polypeptides. The Examiner's interpretation of the scope of claim 9 is not fairly construed in view of the specification and Applicants respectfully request that this rejection be withdrawn.

The Examiner further rejects claims 5, 6, 9, and 10 under 35 U.S.C. 112, first paragraph because the Examiner believes that the claims are not enabled by the specification. With respect to claim 5, the Examiner asserts that the claim is drawn to a nucleotide that encodes a fragment of SEQ ID NO:2; a nucleic acid that hybridizes to a nucleic acid of SEQ ID NO:1; a nucleic acid that encodes a polypeptide that is at least 85% identical to the polypeptide of SEQ ID NO:2, and the claim is so broad that it encompasses an enormous genus of nucleic acids. Applicants respectfully traverse this rejection on the grounds that the claims do not encompass an enormous genus and one skilled in the art, having seen the present specification, is able to prepare and test the claimed nucleic acids without undue experimentation

Applicants respectfully submit that the Examiner has misstated the standard of enablement. In order to meet the enablement requirement a specification need only teach one of ordinary skill in the art how to make and use the claimed invention without undue experimentation. The Examiner recites Wands factors to be considered in determining undue experimentation, but the Examiner provides no sound basis for the conclusion that one of ordinary skill in the art is unable to make and use the described polynucleotides. The law of enablement does not require that all possible embodiments embraced by the claims are described. Indeed the standard does not require any working examples. And, contrary to the Examiner's assertion, there is no requirement that the specification provide precise structural and functional requirements for every embodiment encompassed by the claim. As long as structures encompassed by the claim can be prepared and functionally tested, the enablement requirement is met. Thus, the law does not require that the specification describe which portions of SEQ ID NO:1(2) are critical to the activity of the IL-1RacP. Further there is no

requirement to teach what modifications one can make to SEQ ID NO:1 that result in protein mutants with the same functions as SEQ ID NO:2. The standard is whether a person skilled in the art is able to make the embodiments and determine which embodiments would be inoperative or operative, without undue experimentation, using the state of the art and Applicant's written disclosure. The test for undue experimentation is not merely quantitative, since a considerable amount of experimentation is permissible, if it is routine. Thus, the Examiner's assertions that all possible variants be described is erroneous and requiring such descriptions is improper.

The present specification discloses sequence information for a human IL-1RacP that has a cytoplasmic domain that is distinctly different than the IL-1RacP previously discovered. Page 25, starting at line 32, and page 26-29 describe assay methods for determining interaction of the IL-1RAcP to IL-1 family members and IL-1R signal transduction proteins such as MyD88, IRAK-1, 2, M and TRAF6, all of which are identified on page 8, line 13, as intercellular signaling components associated with IL-1 signaling through IL-1R. Additionally, the specification is very thorough in its description of methods for making analogues, mutants and variant DNA and polypeptides that are homologous to the native IL-1RAcP described in SEQ ID NO:2. (see specification beginning at page 13 and continuing through page 16). The specification further describes algorithms for determining percent identity between polynucleotides and polypeptides and it provides guidance relating to stringency conditions for hybridization conditions relating to the claimed polynucleotides. It cannot be disputed that preparing mutant polynucleotides, including performing hybridization procedures, and preparing and testing polypeptides involve techniques that are routine matters for persons having ordinary skill in the art. Furthermore, in this art the level of ordinary skill is very high. Therefore, knowledge of a variety of sophisticated techniques and methods is presumed. It requires only routine methodology to construct a DNA that encodes a polypeptide that has a high degree of similarity with a predetermined polypeptide; it also requires only routine methodology to test whether such polypeptide binds associates with signal transduction factors. Once the IL-1RAcP sequence information described in the specification is available, mutagenesis procedures allowing thousands of DNA and polypeptide variants to be prepared and tested in an almost automated manner are known in the art and easily performed. With such technology available there is little basis for arguing that preparing and testing vast numbers of variants involves undue experimentation. Thus, the present specification describes that which encompasses the claimed DNA and enables one of ordinary skill in the art to make polypeptides using routine procedures and to determine which polypeptides would be operative, with no undue experimentation.

Further to the above remarks relating to testing candidate variants, the PTO has made it clear that the teaching required to support claims encompassing a number of molecules which are *further limited by reciting an operable activity*, (in this case, as amended such operable activity is the ability to interact with an IL-1R signal transducing factor) is

satisfied if the disclosure teaches how to make a candidate molecule and how to test the candidate molecule for the activity. *Ex parte Mark* 12 USPQ2d 1904 (Bd. Pat. App. & Int'l 1989). Since the specification, in combination with the knowledge of those skilled in the art, teaches how to make the claimed variants and the specification teaches how to test for the claimed interaction, the specification enables the subject claims. Any requirement that Applicant limit the claims to specifically recited polynucleotide sequences does not adequately protect Applicant in view of the scope of the invention and the disclosure. Thus, it is improper to demand that Applicant limit the claimed invention to specific structures when it is well within the knowledge of those skilled in the art to use routine experimental techniques to make and test for all of the claimed polynucleotides. Applicant respectfully submits that the Examiner's apparent requirement that the specification identify molecule regions that are critical for activity is improper. The enablement requires only that one skilled in the art be able to practice the claimed invention without undue experimentation and the present specification provides such guidance. The law is clear that if one can make a molecule and test the molecule, the claim is enabled.

With respect to the Examiner's rejection of the parts of claim 5 that recite specific nucleotide sequences or fragments of the sequences, the Examiner appears to doubt the truth of the statements relating to the identity of the cytoplasmic domain. The Examiner provides no support or basis for such doubt and Applicants submit that without such support it is improper for the Examiner to doubt the facts as presented by Applicant.

Finally, the Examiner cites *Ex parte Forman*, 230 USPQ 546 (BPAI 1986) in support of the Examiner's position. Applicants respectfully submit that this case has little in common with the instant specification and claims. In *Ex parte Forman* the claims at issue included mutant strains and the Board found that hyperconjugation techniques were not sufficiently developed and undue experimentation was required to obtain viable mutant strains. This differs from the present claims and specification in that the mutagenesis and testing procedures are highly developed and the claims positively recite an activity. According to *Ex parte Mark* when the claims recite an activity and one can readily test for the activity and is able to make candidate molecules for testing, that is all the teaching that is required.

In view of the above remarks and amended claim 5, Applicants respectfully submit that amended claim 5 is fully enabled and Applicants request that the Examiner withdraw the rejection of claim 5 under 35 U.S.C. 112, first paragraph, for enablement. Claims 6, 9, and 10 depend from claim 5 and since claim 5 should be deemed enabled, these claims are also enabled.

The Examiner also rejects claims 5, 6, 9, and 10 under 35 U.S.C. 112, first paragraph, because the Examiner is of the opinion that these claims contain subject matter which is not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor has possession of the claimed invention. The examiner asserts that claim 5 g), h), i), j) encompass an enormous genus of nucleic acids that vary substantially

both in length and in nucleic acid composition. (Note: the Examiner sometimes refers to claim 1 in this discussion but since claim 1 does not contain the language referred to by the Examiner, Applicants are treating the comments as though the Examiner refers to claim 5.) In fact, claim 5 does not encompass an enormous genus. Each of parts a), b), e), g), recite specific sequences. As amended part g) further requires that the fragment interact with an IL-1R signal transduction factor, which are described in the specification. Parts h), i), and j) require that the variant interact with an IL-1R signal transduction factor. Those skilled in the art know that in order to preserve the functional ability to interact with these factors, the number of variants is in fact small.

The Examiner asserts that parts a), b), and e) do not require that the nucleic acids possess any particular biological activity. Applicants submit that there is no requirement that these claims recite activity. The claims recite a specific structure which inherently has the protein interaction activity described in the specification. There is no reason for the Examiner to doubt that the recited polynucleotides include the cytoplasmic domain. Inherently the described domain has signaling capability and there is no requirement that the recited structure be further limited with an activity recitation. Similarly, there is no requirement that the specification recite portions of IL-1RAcP variants that must be conserved to retain activity. It is enough to describe the structure in terms of hybridization characteristics and interaction characteristics. Applicants submit that the specification, by completely describing this form of IL-1RAcP has provided sufficient distinguishing identifying characteristics of this form of IL-1RAcP.

Finally, the PTO's Written Description Guidelines support this position. The Examiner's attention is directed to Example 9 of the Written Description Guidelines in which case claims that recite polynucleotides that hybridize to characterized polynucleotides and have a recited activity meet the Written Description Requirement. The PTO recognizes that the instant disclosure is sufficient to convey to one skilled in the art that Applicants are in possession of the subject matter of all of claim 5.

The Examiner further rejects claim 5 under 35 U.S.C. 112, second paragraph, because the Examiner believes the claim is indefinite. In particular, the Examiner feels that because part g) and part i) recite polypeptides(s) described in a)-g) and part a) and g) recite polynucleotides the claim is confusing. Applicants respectfully disagree with the Examiner. Claim 5 part a)-g) claim polynucleotides that encode a specific polypeptide. Parts g) and i) also claim polynucleotides that encode polypeptides. The polypeptides recites in parts g) and i) simply reference the polypeptides of parts a)-g). There is nothing confusing about this claiming method. One skilled in the art fully understands the reference to the polypeptides of parts a)-g). The Examiner concludes that the claim is indefinite, but doesn't provide sound reasoning as to why one skilled in the art finds it indefinite. Applicants invite the Examiner to do so. In the absence of a sound explanation of indefiniteness Applicants ask the Examiner to withdraw this rejection.

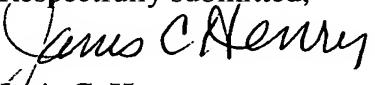
The Examiner rejects claim 5 (part h) 6, 9, and 10 under 35 U.S.C. 102(b) as being anticipated by Huang et al. The cDNA disclosed by Huang et al. includes residues 1-448 of SEQ ID NO:2. By the above amendment, Applicants amend part h) to reference the polynucleotide of parts e)-g). In doing so, only the uniquely novel portion of the splice variant forms the basis for the hybridization polynucleotide. In view of the above remarks, the Huang et al. reference is not anticipatory and Applicants request that this rejection be withdrawn. Claims 6, 9, 10 depend from claim 5 and claim 5 is not anticipated. Thus, the rejections as to claims 6, 9, and 10 should be withdrawn

The Examiner further rejects claims 5 part h), 6, 9, and 10 under 35 U.S.C. 102(b) as being anticipated by the Cao reference. Preliminarily, since this application claims the benefit of a provisional application filed October 31, 2000, this is more appropriately a 102(e) issue. In view of the amendment to claim 5 h), and for the reasons described above relevant to the Huang et al. reference, Applicants respectfully submit that this rejection is overcome and request that the Examiner withdraw rejection. As for claim 6, 9, and 10, these too are not anticipated and their rejection should be withdrawn.

Finally, the Examiner objects to claim 2 because a period is missing; to claims 5, 6, 9 and 10 because they recite unelected subject matter; to claim 5 because part g) refers to itself; and claim 9 for dependency.

The claims have been amended or indicated withdrawn to overcome the above objections. Accordingly, Applicants request that this objection be withdrawn.

In view of the foregoing remarks and amendments, Applicants submit that the claims pending in this application are in condition for allowance and respectfully request a notice to that effect.

Respectfully submitted,

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Date: Nov. 24, 2003

Signed: Nanci M. Kertson
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